ficulties that tend to prolong the time of operation and resulting often in various post-operative complications.

As soon as the peritoneum has been sectioned, the greater omentum and collapsed small bowel protrude through the wound and their replacement and retention is often difficult. At times the fine web-like omentum is torn, producing holes in this curtain-like structure that loops of bowel may slip through and years later cause intestinal obstruction.

Particularly is the omentum troublesome during the closure of the peritoneum. It clings to the suture material and pokes out between the stitches, sometimes escaping the notice of the surgeon, and adheres to the edges of the fascia, thus preventing proper healing, and predisposes to early rupture of the wound or later to postoperative hernia. These little omental herniae not only produce weakened areas in the wound, but often strangulate, and are the cause of post-operative vomiting that is credited to other factors. The fine web-like omentum is one of the bugaboos of infant abdominal surgery.

The improved incision, called "the flood gate incision," for want of a more appropriate name, does away with the above described difficulties and complications. This incision is made over the quadrate lobe of the liver above its free margin. The quadrate lobe extends lowest about 2 cm. to the right of the midline; a longitudinal incision 5 cm. in length, located 2 cm. to the right of the midline and above the free margin of the quadrate lobe, gives ample room for the muscle-splitting procedure. This incision may be completed while the child is straining without any hollow viscera or omentum escaping; the liver moves with respiration and bulges slightly into the wound if the abdominal muscles tighten. This incision is particularly useful when operating under local anesthesia.

The dorsal surface of the operator's left index finger slipped into the wound easily displaces the "flood gate," the quadrate lobe of the liver, superiorly. The pylorus lies directly posterior to the quadrate lobe and is easily grasped between the index finger and thumb of the operator's left hand and elevated through the wound.

The splitting of the pylorus is not difficult if the scalpel be laid aside after an incision is made through the serosa and the more superficial fibers of the pyloric muscle. Into this fissure the closed tip of a mosquito clamp is forced and the shafts separated as in the process of blunt dissection. The hypertrophied muscle tears readily down to the mucous membrane. Care must be taken not to open the duodenum; its muscular walls are underdeveloped, quite in contrast to the hypertrophied gastric musculature.

The splitting completed, the pylorus retracts, the liver glides down, completely blocking off the abdominal hollow viscera and omentum from the wound, and a rapid careful closure, layer by layer, may be made.

INVOLVEMENT OF THE GENITO-URINARY TRACT ASSOCIATED WITH ACTIVE PULMONARY TUBERCULOSIS.*

By ANDERS PETERSON, M. D., Los Angeles.

During the demobilization of the army in the fall of 1918 and greater part of 1919 the war department segregated into special hospitals all of the soldiers who were suffering from pulmonary tuberculosis, and also those in whom the medical boards found suspicious evidence of this disease. The Surgeon-General's office took the position that no soldier should be returned to his home until he was placed in the best possible physical condition, and if not curable, until such time as he had reached his maximum improvement.

By this time the medical corps had been well organized into team work and this large army of men had a fairly careful and complete physical examination before their discharge into civil life, and it is due to this systematic examination that thousands of men were retained for observation and treatment. Indeed, so great a care was exercised by the camps of demobilization that many men who had a very slight or practically no evidence of tuberculosis were retained for a term of observation, usually three months.

Four special hospitals were established for the care of soldiers suffering from pulmonary tuberculosis. Oteen, North Carolina; Hospital No. 21 near Denver, Colorado; Whipple Barracks near Prescott, Arizona, and Fort Bayard, New Mexico.

Fort Bayard is located in the eastern foothills of the Rocky Mountains, ten miles from Silver City. This post was established about sixty years ago to protect the miners of this region from the Warm Spring Apaches, and thirty years ago a small tuberculosis sanitarium was established here. It has since remained the United States General Hospital for care of pulmonary tuberculosis. The pre-war capacity reached 300 beds. During the most active demobilization period temporary buildings and hospital tents were used extensively. In the winter of 1919 the patient population reached 2000. This number was reduced by spring to between 1000 and 1200 patients. During eleven months of service at Fort Bayard the patient population varied between 800 and 2000, practically all in the original draft age (20 to 30 years). Approximately 80 per cent. of the cases had active pulmonary tuberculosis, the balance, or 20 per cent., were sent here under observation for tuberculosis. Usually about 250 patients with far advanced lesions were cared for in the infirmaries.

My object in calling attention to these facts is for a comparison of the involvement of the genito-urinary organs in the presence of pulmonary tuberculosis.

Clinically, I demonstrated only five cases of surgical tuberculosis of the kidney, three of whom had active lung involvement. One had bilateral renal tuberculosis and one had a unilateral renal

* Read before the Forty-ninth Annual Meeting of the Medical Society of the State of California, Santa Barbara, May, 1920.

tuberculosis and tuberculous epididymitis, with no active pulmonary lesions. Involvement of the epididymis was observed in three cases. On one an epididymectomy had been performed elsewhere and a fistula persisted. One had bilateral involvement and in one an acute abscess developed, destroying both the epididymis and testicle. A castration was done and the wound healed in three weeks. Two months later the patient died from an acute tuberculous pneumonia. At autopsy the kidneys were free from tuberculous invasion. The prostate showed a caseated abscess and there was a cold abscess at the stump of the cord following the castration, which had not pointed to the surface.

At autopsies massive lung lesions were always found—old multiple cavities filled with pus, cheesy material and necrotic tissue; large massively walled-off cavities with very extensive destruction of tissue. The above old types of lesions were now and then associated with a fresh general miliary distribution, both into the remaining functionating lung tissue and into the peritoneum and abdominal viscera. Indeed, such massive chronic involvement was demonstrated at these post mortems to make one appreciate the great tolerance compatible with life the human body possesses against this disease. All of these fatal cases were acutely toxic for weeks to months prior to death with high temperature, great emaciation and dyspnea. Certainly the eliminating structures, such as the kidneys, were over burdened with toxic substances as well as the bacilli in the blood and lymph streams.

Except in cases where acute miliary tuberculosis was the immediate cause of death, the genito-urinary tract was rarely involved in the infection, and here the lungs showed old massive lesions, while the lesions in the kidneys were of the young or miliary type.

Authorities uniformly agree that tuberculosis of the genito-urinary tract is secondary to foci in other organs of the body and give the lungs as a frequent seat of the primary lesions.

Tuberculosis of the lymph glands may be quiescent for years and under favorable conditions become active and cause secondary infection of other organs; this fact is often difficult of demonstration.

Braasch, of the Mayo Clinic, in a review of a large number of cases of surgical tuberculosis of the kidney, found that 5 per cent. had active pulmonary lesions. (Personal communication.)

* Tice states that "tuberculosis of the kidney is probably a less common complication of pulmonary tuberculosis than is the reverse sequence of events. It is surprising how seldom we find clinically a complicating renal tuberculosis in pulmonary cases. When renal infection occurs it may be in the form of miliary tuberculosis, which gives no symptoms during life."

** "Nephritis occurs among tuberculous patients in the same proportion as among non-tuberculous patients. Albuminuria does not mean tuberculosis of the kidneys."

*** "Tuberculosis of the kidney forms 10% of tuberculous infections. Acute nephritis, parenchymatous nephritis, interstitial nephritis and waxy disease of the kidney are observed in the kidneys of tuberculous patients. These lesions are due to the toxin of the tubercle bacillus on the kidney."

My experience with tuberculosis of the genito-urinary tract, prior to service in the army, showed that active pulmonary lesions were not frequently found.

Let us consider the behavior of tuberculous invasion from a general standpoint of immunization. It is certain that our continent is populated by a tubercularized people, that is: all children brought up in this country are exposed in various degrees to the infection of tuberculosis—those living in the city to a far greater extent than those in the country districts. Children who develop pulmonary tuberculosis succumb early to the disease, in a miliary form. The form with which we have to deal is the chronic pulmonary type which becomes manifest in the early adult life (20-35 years). These last named individuals were all exposed during childhood, but did not develop pulmonary type of tuberculosis. However, later in life, due to some intervening factors, as acute febrile diseases, overwork, life in the tropics, etc., the pulmonary type of disease becomes manifest.

We can only give credit to two means of invasion:

(1) Either through a massive fresh exposure to the tubercle bacillus, due to living with people with active tuberculosis, or:

(2) A breaking down of the foci already existing in the lymphatic glands. Thus tuberculosis of the lungs might well be considered secondary.

Surgical tuberculosis of the genito-urinary tract was not a frequent complication in patients suffering with pulmonary tuberculosis.

From a clinical standpoint I feel that tuberculosis of the genito-urinary organs is primary to a far greater extent than is generally considered.

* Tice, Practice of Medicine, Vol. LI, pp. 464, 465.
** Tice, Frederick, Vol. II, pp. 472-3.
*** Thompson, Walker, pp. 227-230.

VESICO-INTESTINAL FISTULA.*

By LOUIS CLIVE JACOBS, M. D., San Francisco.

Because of the rarity of this condition, I am taking the liberty of reporting a case. An elderly man, 76 years of age, a grandfather of healthy children, had been in the best of physical condition for the past 20 years. For the last three years he had had a yearly physical examination by the doctor of his life insurance company. He states that all physical findings were negative. The urine had been free from pus and albumen. He denies all venereal diseases, has never had typhoid fever. He gives a history of having suffered from gout, principally in his big toes and of a persistent psoriasis for a number of years. He has had no dysentery nor any trouble with his bowels or rectum.

On August 4th last he was feeling in the best of health, but at about midnight he awoke with an intense desire to urinate, and to his surprise he passed a small quantity of dirty, bloody urine. This was accompanied with burning and pain. During the balance of the night he had to urinate every

* Read before the Forty-ninth Annual Meeting of the Medical Society of the State of California, Santa Barbara, May, 1920.